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22

PATIENT-NURSE DEPENDENCY
GENERAL MEDICINE

*Issued by the Research and Planning Unit
of the Department of Health
Wellington, New Zealand*



1965



7/22/65 DEPARTMENT OF HEALTH

PATIENT-NURSE DEPENDENCY GENERAL MEDICINE

An Analysis of Survey Data from Three Public Hospitals in Christchurch 1962

by

THE RESEARCH AND PLANNING UNIT
(formerly the Operational Research Unit)

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SPECIAL REPORT No. 22

*Issued by the Research and Planning Unit
Department of Health, Wellington
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FOREWORD

by Dr H. B. Turbott, I.S.O., M.B., Ch.B., D.P.H.,
Director-General of Health

This report is one of a series concerned with a survey of patient nurse dependency made in three hospitals administered by the North Canterbury Hospital Board by the Operational Research Unit with the active co-operation of the Board.

In general each report covers a clinical specialty. Since it deals with only part of the survey data it is best considered with others in the series. The information in the report is of wide interest and I hope it will help many hospital administrators.

Reports already published have shown the worth of operational research methods in hospital planning and organisation. In this important work of giving the best possible hospital care to all who need it with resources which are often limited, the words of Charles Steinmetz are well understood -

"Co-operation is not a sentiment - it is an economic necessity".

I am pleased to record the helpfulness of the North Canterbury Hospital Board not only in assisting with the survey but also in implementing many of the recommendations.

H. B. Turbott.

CONTENTS

	<u>Page</u>
FOREWORD	
PREFACE	
 <u>Section</u>	
7.1 Introduction	1
7.2 The Sample	1
7.21 Observations	1
7.22 Comments	1
7.3 The Patients	1
7.31 Sex and Age-Group	1
7.32 Type of Admission	1
7.33 Reason for Admission	2
7.34 Patients Having Surgery	2
7.35 Disease-Group	2
7.36 Observation	2
7.37 Comments	3
7.4 The Load of Patient Days	3
7.41 Hospital and Ward	3
7.42 Sex and Age-Group	3
7.43 Type of Admission	3
7.44 Reason for Admission	3
7.45 Patients Having Surgery	3
7.46 Disease-Group	4
7.47 Observations	4
7.48 Comments	5
7.5 Length of Stay	5
7.51 Patients Discharged	5
7.52 Patients Still in Hospital	5
7.53 Observations	5
7.54 Comments	6
7.6 Patient Dependency	6
7.61 Admission and Discharge	6
7.62 Age-Group	6
7.63 Hospital and Ward	6
7.64 Day of Week	7
7.65 Pre-Discharge Dependency	7
7.66 Observations	7
7.67 Comments	7
7.7 Discussion	8
7.71 Percentage Occupancy	8
7.72 Equivalent Beds	8
7.73 Bed Turnover	8
7.74 Pre-Discharge Dependency	8
7.75 Type of Beds	9
7.76 Prediction of Demand	10
7.761 General	11
7.762 Assessment on Population Basis	11
7.763 Recommended Provision	12
7.8 Conclusion and Recommendations	13
 <u>Table</u>	
1 Patients in Hospital at the start of the Survey, Admitted During the Survey and in Hospital at the end of the Survey, by Hospital and Type of Admission	14

<u>Table</u> (Continued)	<u>Page</u>
2 Patients in Hospital at the Start of the Survey, Admitted During the Survey and in Hospital at the End of the Survey, by Hospital and Ward	14
3 Patients by Sex, Age-Group and Hospital	15
4 Patients by Type of Admission, Having Surgery and Hospital	15
5 Patients by Reason for Admission and Hospital	15
6 Patients by Disease-Group, Hospital and Type of Admission	16
7 Patient Days by Hospital and Ward, Number and Percentage	17
8 Patient Days by Sex, Age-Group and Hospital	18
9 Patient Days by Type of Admission, Having Surgery and Hospital	18
10 Patient Days by Reason for Admission and Hospital	18
11(a) Patient Days by Disease-Group, Hospital and Type of Admission	19
11(b) Patient Days by Disease-Group, Hospital and Type of Admission for Patients 13 to 64 Years of Age	20
11(c) Patient Days by Disease-Group, Hospital and Type of Admission for Patients 65 Years of Age and Over	21
12 Frequency Distribution of Lengths of Stay for Discharges and for Deaths by Hospital and Age-Group	22
13 Frequency Distribution of Lengths of Stay for Patients Still in Hospital at End of Survey by Hospital and Age-Group	24
14 Patient Dependency on Admission by Hospital and Type of Admission	25
15 Patient Dependency on Discharge by Hospital and Type of Admission	25
16 Patient Days in each Dependency Category by Age-Group and Hospital	25
17 Patient Days in each Dependency Category by Hospital and Ward	26
18 Equivalent Number of Patients in Hospital During the Survey Period by Hospital, Dependency Category and Day of Week	27
19 Frequency Distribution of the Number of Consecutive Days Immediately before Discharge Spent by Patients in Dependency Category 1	28
20 Frequency Distribution of the Number of Consecutive Days Immediately before Discharge Spent by Patients not Receiving any Item of Special Nursing Care	29
21 Patient Days for Short- and Long-Stay Patients by Age-Group and Hospital	30
22 Equivalent Beds by Hospital, Length of Stay, Age-Group and Percentage Occupancy	31
Figure 1 Frequency Distributions of Lengths of Stay for Discharges and for Deaths	23

P R E F A C E

This report is one of a series of administrative papers written by the Research and Planning Unit (formerly called the Operational Research Unit) to make recommendations to the North Canterbury Hospital Board and the Department of Health on the provision and organisation of hospital accommodation on the basis of survey data.

It will be well understood by workers in operational research in hospitals that we are indebted to the work of others - the Nuffield Provincial Hospitals Trust, the Operations Research Division of The Johns Hopkins Hospital and the Oxford Regional Hospital Board to name only three. The recording of dependency by day of operation follows work done at Oxford by Jeffery and Barr (unpublished).

We would thank for their co-operation and assistance during the survey, the nurses in charge of wards of Christchurch, Princess Margaret and Burwood Hospitals who daily recorded the patient data and assessed the dependencies; other members of the nursing staffs of the hospitals especially Mrs M.E.F. Chambers, Matron-in-Chief, and Miss J. Taylor and Miss S.C.I. Rolls, Matrons of Princess Margaret and Burwood Hospitals; Dr T. Morton, Medical Superintendent-in-Chief and Dr C. Dick and Dr J. H. McIntyre, Medical Superintendents of Princess Margaret and Burwood Hospitals; Mr J. G. Laurenson, Secretary to the Board and his staff.

The reports were written in consultation with Dr L. M. Berry, Medical Superintendent-in-Chief, Dr C. G. Riley, Director of Medicine and Mr H.E.H. Denham, Director of Surgery and the report on Paediatrics was written in consultation also with Dr F. T. Shannon, Paediatrician to the Board.

Acknowledgment is made of the help received from Dr R. M. Williams, Director, Applied Mathematics Laboratory and his staff especially with statistical analysis and computer programming and Mr J.P.M. Cornwall, Senior O & M Officer, State Services Commission in the preparation of Reports Nos. 12, 13 and 14.

The Operational Research Unit personnel during the survey were:

Dr I. J. Jeffery,	Physician - Director
Miss Shirley M. Lowe,	Nurse Member
Mr L. V. Chaplin,	Work Study Member
Mr D. Blakeley,	Survey Liaison Officer
Mr C. Gardiner,	Medical Statistician.

It is pleasant to recall the courtesy and co-operation given by the North Canterbury Hospital Board and the staff. The survey was possible only because of this willing assistance and the credit for any worthwhile results which are achieved is due in no small measure to the Board.

PART 7 : GENERAL MEDICINE

7.1 INTRODUCTION

This Part of the report concerns patients who were 13 years of age or over and who were admitted under a consultant physician. Unless another meaning is given to it, the expression "Sample" refers only to these patients.

Data for children up to 13 years of age are analysed in Part 6, "Paediatrics" (Special Report Series No.15) and data for patients who were 65 years of age or over are analysed also in Part 5 "Geriatrics" (Special Report Series No.14)

This part should be read in conjunction with Parts 1, 2 and 3 which refer generally to the Survey in Christchurch (Special Report Series No.12).

7.2 THE SAMPLE

The Sample is a one-in-three random sample and consists of 461 patients who were in Christchurch, Princess Margaret or Burwood Hospitals at the start of the survey or admitted during it.

The numbers of patients in hospital at the start of the survey, admitted during it and in at the end of it are given in Table 1 by hospital and type of admission and in Table 2 by hospital and ward.

The survey covered 88 days for Christchurch Hospital and 86 and 91 days for Princess Margaret and Burwood Hospitals.

7.21 OBSERVATIONS

- (1) The patients were 461 of the 1,565 in the complete survey sample.
- (2) Christchurch, Princess Margaret and Burwood Hospitals treated 209, 173 and 79 patients respectively of the sample of 461.
- (3) Patients were observed in 10 wards of Christchurch Hospital, 5 wards of Princess Margaret and 6 wards of Burwood.

7.22 COMMENTS

- (1) The patients were 29.5% of all patients in the complete survey sample.
- (2) Christchurch treated 45.3% of them and Princess Margaret and Burwood 37.5% and 17.2% respectively.
- (3) The admission rate of the sample during the survey was 172 in 88 days for Christchurch and is equivalent to 2,140 patients annually (three times the one-in-three sample).

Corresponding annual rates for Princess Margaret and Burwood are 1,757 and 529.

- (4) The corresponding admission rate for the three hospitals taken together is 4,426 patients annually.

7.3 THE PATIENTS

This section analyses data associated with admission and discharge. Where available, the diagnosis on discharge is used. Otherwise the provisional diagnosis is taken.

7.31 SEX AND AGE-GROUP

The following age-groups are used:-

- (a) 13 to 64 years.
- (b) 65 years and over.

The patients are given by sex and age-group for each hospital in Table 3.

7.32 TYPE OF ADMISSION

The numbers of emergency and waiting-list admissions are given by hospital in Table 4 which also gives the numbers of patients having surgery.

7.33 REASON FOR ADMISSION

The reasons for admission were recorded as:-

- (a) therapy
- (b) for investigation
- (c) infectious
- (d) other

In the survey "(c) infectious" was used only for patients who were admitted because of an infectious condition.

The number in each group is given by hospital in Table 5.

7.34 PATIENTS HAVING SURGERY

The number of patients having surgery is given for emergency and waiting-list admissions by hospital in Table 4. "Surgery" is defined in Part 2 (Special Report Series No.12).

7.35 DISEASE-GROUP

The number of patients in each of the more commonly occurring disease-groups is given by hospital for emergency and waiting-list admissions in Table 6.

7.36 OBSERVATIONS

- (1) There were 221 males and 240 females in the sample.
- (2) 221 patients were aged 13 to 64 years and 240 were aged 65 years or over.
- (3) Of the 461 patients, 400 were emergency admissions and 61 waiting-list.
- (4) Of the 61 waiting-list admissions 32 were male and 29 female; 20 were aged 13 to 64 years and 41 were aged 65 years or over.
- (5) 357 patients were admitted for therapy and 66 for investigation.
- (6) 379 were admitted from home and 201 were discharged there; 34 were admitted from and 18 were discharged to another public hospital.
- (7) 5 were admitted from and 8 were discharged to a private hospital.
- (8) There were 79 deaths and 258 discharges in the sample during the survey period.
- (9) Of the 258 discharges, 169 were referred to their own doctor, and 53 to "other".
- (10) The discharges of 58 patients were delayed for social reasons. 38 of these had been discharged by the end of the survey.
- (11) Commonly occurring disease-groups were:-
 - (a) Vascular lesions of central nervous system (Code 330 - 334) - 57 patients.
 - (b) Arteriosclerotic and degenerative heart disease (Code 420 - 422) - 45 patients.
 - (c) Pneumonia (Code 490 - 493) - 42 patients.
 - (d) Symptoms senility and ill-defined conditions (Code 780 - 795) - 29 patients.
 - (e) Other heart disease (Code 430 - 434) - 27 patients.
 - (f) Chronic bronchitis (Code 500 - 502) - 25 patients.
 - (g) Malignant neoplasms (Code 140 - 205) - 24 patients.
 - (h) Other diseases of central nervous system (Code 350 - 357) - 20 patients.

- (i) Diabetes (Code 260) - 18 patients.
- (j) Heart and other hypertensive disease (Code 440 - 447) - 15 patients.
- (k) Influenza (Code 480 - 483) - 14 patients.
- (l) Mental, psychoneurotic, personality-disorders (Code 300 - 318) - 12 patients.

7.37 COMMENTS

- (1) 47.9% of the patients were male and 52.1% female.
- (2) 52.1% of the patients were 65 years of age or over and 47.9% were in the 13 to 64 age-group.
- (3) Patients 65 years of age or over were 50.7% of the patients in the sample treated at Christchurch. Corresponding percentages for Princess Margaret and Burwood were 47.9 and 64.6.
- (4) 86.8% of the patients were emergency admissions.
- (5) Of the waiting-list admissions 40 were admitted to Burwood.
- (6) 77.4% of the patients were admitted for therapy and 14.3% for investigation. 1.3% were admitted as infectious and 7.0% were admitted for other reasons.
- (7) 82.2% of the patients were admitted from home and 77.9% of the discharges were discharged there.
7.4% of the patients admitted were transfers from one public hospital to another. Of the 258 patients discharged 7.0% were discharged to another public hospital within the survey.
- (8) On discharge 65.5% of the patients were referred to their own doctors and 20.5% were referred to "other" - which included out-patient clinics.
- (9) The diagnosis-group vascular lesions of the central nervous system (Code 330 - 334) accounted for 12.4% of the admissions.
- (10) 4.6% of the patients had surgery.
- (11) 5.4% of the patients were referred to a medical social worker and 4.3% to a district nurse.

7.4 THE LOAD OF PATIENT DAYS

This section deals with the number of days spent in hospital during the survey period by the patients in the sample. The analysis of patient days by dependency is discussed in Sections 7.6 and 7.7.

7.41 HOSPITAL AND WARD

The number of patient days is given by hospital and ward in Table 7.

7.42 SEX AND AGE-GROUP

Patient days are given by sex, age-group and hospital in Table 8.

7.43 TYPE OF ADMISSION

Patient days are given for emergency and waiting-list admissions by hospital in Table 9.

7.44 REASON FOR ADMISSION

Patient days are given by reason for admission and hospital in Table 10.

7.45 PATIENTS HAVING SURGERY

Patient days for the patients in the sample who had surgery are given by type of admission and hospital in Table 9. "Surgery" is defined in Part 2 (Special Report Series No. 12).

7.46 DISEASE-GROUP

Patient days for the more frequently occurring disease-groups are given by type of admission and hospital in Table 11 (a), (b) and (c).

7.47 OBSERVATIONS

- (1) The patients accounted for 9,765 patient days of the 22,875 recorded during the survey period for all patients in the survey.
- (2) Of the 9,765, 3,412 were spent in Christchurch, 3,340 in Princess Margaret and 3,013 in Burwood.
- (3) Wards in which the patients were treated were notably:-
 - (a) At Christchurch
 - (i) Ward 2 with 1,051 patient days.
 - (ii) Ward 13A with 622.
 - (iii) Ward 4 with 475.
 - (iv) Ward 13B with 380.
 - (v) Ward 12B with 329.
 - (vi) Ward 6 with 327.
 - (b) At Princess Margaret
 - (i) Ward B1 with 1,098 patient days.
 - (ii) Ward B4 with 843.
 - (iii) Ward B2 with 825.
 - (iv) Ward B3 with 558.
 - (c) At Burwood
 - (i) Ward 10 with 1,065 patient days.
 - (ii) Ward 6 with 752.
 - (iii) Ward 9 with 684.
 - (iv) Ward 2 with 457.
- (4) The disease-groups which predominated in contributing patient days were:-
 - (a) Vascular lesions of central nervous system (Code 330 - 334) with 1,761.
 - (b) Other diseases of central nervous system (Code 350 - 357) with 811.
 - (c) Arteriosclerotic, and degenerative heart disease (Code 420 - 422) with 773.
 - (d) Symptoms, senility and ill-defined conditions (Code 780 - 795) with 612.
 - (e) Pneumonia (Code 490 - 493) with 590.
 - (f) Chronic bronchitis (Code 500 - 502) with 534.
 - (g) Diabetes (Code 260) with 502.
 - (h) Malignant neoplasms (Code 140 - 205) with 398.
 - (i) Arthritis (Code 720 - 725) with 389.
 - (j) Other heart disease (Code 430 - 434) with 366.

7.48 COMMENTS

- (1) The patients accounted for 42.7% of the patient days spent by all patients sampled during the survey in the three hospitals.
- (2) Christchurch Hospital took 34.9% of the load; Princess Margaret 34.2% and Burwood 30.9%.
- (3) The load at Christchurch is equivalent to 10,236 patient days in 88 days (three times the one-in-three sample). This corresponds to 116.3 beds at 100% occupancy, 129.2 beds at 90% and 136.8 beds at 85%.
- (4) The corresponding beds at Princess Margaret are 116.5, 129.5 and 137.1.
- (5) The corresponding beds at Burwood are 99.3, 110.3 and 116.8.
- (6) The equivalent beds at the three hospitals taken together is thus 332.1 beds at 100% occupancy and 369.0 and 390.7 beds at 90% and 85% occupancy.
- (7) Patients 65 years of age and over accounted for 51.2% of the patient day load of Christchurch Hospital, 61.9% of Princess Margaret, 74.7% of Burwood and 64.5% of the three hospitals taken together.
- (8) Long-stay patients accounted for 15.7% of the patient day load of Christchurch Hospital, 23.4% of Princess Margaret, 74.7% of Burwood and 36.5% of the three hospitals taken together.
- (9) Patients 65 years of age and over who were long-stay patients accounted for 9.7% of the Christchurch load, 20.9% of Princess Margaret, 68.0% of Burwood and 31.5% of the load of the three hospitals taken together.

7.5 LENGTH OF STAY

This section deals with the length of stay recorded for patients in the sample who were discharged or who died during the survey period.

7.51 PATIENTS DISCHARGED

During the survey period there were 258 discharges and 79 deaths. These are given by hospital in Table 2 and the distributions of their overall lengths of stay are given separately for discharges and deaths in the two age-groups 13 to 64 years and 65 years and over in Table 12 and illustrated in Figure 1.

7.52 PATIENTS STILL IN HOSPITAL

The 124 patients who were still in hospital at the end of the survey are given by hospital in Table 2 and the distributions of the numbers of days spent in hospital by them when the survey was completed are given separately for the two age-groups 13 to 64 years and 65 years and over in Table 13.

7.53 OBSERVATIONS

- (1) The 337 patients who were discharged or who died during the survey period spent 9,248 days in hospital.
 The average length of stay was 27.4 days.
 The range was 1 to 603 days.
 The modes were 4 and 5 days with 18 patients each. 17 patients spent 7 days and 16 spent 11 days.
 275 of the 337 had a length of stay of 30 days or under, 46 stayed from 31 to 90 days and 16 stayed over 90 days.
 163 of the 337 were treated in Christchurch, 230 in Princess Margaret and 44 in Burwood.
 175 of the 337 were aged 13 to 64 years and 162 were 65 years of age or over.
- (2) The 258 patients who were discharged spent 5,838 days in hospital.
 The average length of stay was 22.6 days.
 The range was 1 to 496 days.
 The modes were 5, 7 and 20 days with 14 patients each. 13 patients spent 4 days, 13 spent 10 days and 13 spent 12 days.

Of the 258 patients, 124 were treated in Christchurch, 103 in Princess Margaret and 31 in Burwood.

Of the 258, 153 were aged 13 to 64 years and 105 were 65 years of age or over.

Of the 258, 217 had a length of stay of 30 days or under, 34 stayed from 31 to 90 days and 7 stayed over 90 days.

- (3) The 79 patients who died spent 3,410 days in hospital.

The average length of stay was 43.2 days.

The range was 1 to 603 days.

The modes were 1 and 2 days with 8 patients each.

- (4) The 124 patients who were in hospital at the end of the survey had then spent 24,290 days in hospital with a mean length of stay of 195.9 days.

Of the 124 patients, 46 were aged 13 to 64 years and 78 were 65 years of age or over.

Of the 46 patients who were 13 to 64 years old, 31 had then been in hospital for up to 30 days, 11 for 31 to 90 days and 4 for over 90 days, with a mean length of stay of 55.8 days and a range of 1 to 1,020 days.

Of the 78 patients who were 65 years of age or older 36 had then been in hospital for up to 30 days, 14 for 31 to 90 days and 28 for over 90 days, with a mean length of stay of 278.5 days and a range of 1 to 5,354 days.

7.54 COMMENTS

- (1) 48.4% of the discharges and deaths were recorded in Christchurch, 38.6% in Princess Margaret and 13.0% in Burwood.
- (2) For the discharges and deaths considered together, 81.6% had a length of stay not greater than 30 days, 13.7% stayed 31 to 90 days and 4.7% stayed over 90 days.
- (3) Of the patients still in hospital at the end of the survey, 37.1% were in Christchurch, 34.7% were in Princess Margaret and 28.2% were in Burwood.
- (4) 16 of the deaths and discharges and 32 of the patients still in hospital stayed more than 90 days. Of the total of 48, 9 were in Christchurch, 10 in Princess Margaret and 29 in Burwood.
- (5) The survey data illustrate the well-known deficiencies in taking mean values for length of stay in the case of groups of patients in which some spend long periods in hospital.

The long-stay patients, i.e. patients with a length of stay over 90 days, who are 65 years of age or over, have been considered also in the report dealing with geriatrics.

- (6) Further comments involving length of stay are made in Section 7.7.

7.6 PATIENT DEPENDENCY

This section deals with the daily dependency of the sample. The definitions of the four dependency categories are given in Part 2 (Special Report Series No.12).

7.61 ADMISSION AND DISCHARGE

The dependency on admission for patients in the sample admitted during the survey period is given by type of admission and hospital in Table 14. Similar data for discharges are given in Table 15.

7.62 AGE-GROUP

The number of patient days spent in each dependency category during the survey is given by age-group and hospital in Table 16.

7.63 HOSPITAL AND WARD

The number of patient days spent during the survey period in each dependency category is given by hospital and ward in Table 17.

7.64 DAY OF WEEK

Mean values for the number of patients in each dependency category for each day of the week are given in Table 18. These mean values are the arithmetical means of three times the one-in-three sample values. Care should be taken, therefore, in comparing the values in this table with those given for the sample only.

7.65 PRE-DISCHARGE DEPENDENCY

A frequency distribution of the numbers of consecutive days immediately before discharge spent by patients not receiving any item of special nursing care under the headings, mental state, dressings, suction, orthopaedic treatment, special drugs, I.V. fluid, oxygen, major observation and special nurse is given in Table 20.

7.66 OBSERVATIONS

- (1) On admission, of the 354 patients, 75 were in Category 1, 139 were in Category 2, 121 were in Category 3 and 19 were in Category 4.
- (2) On discharge, of the 258 patients, 154 were in Category 1, 83 were in Category 2 and 21 in Category 3.
- (3) Of the 9,765 patient days recorded during the survey period 1,562 were in Category 1, 4,541 were in Category 2, 3,577 were in Category 3 and 85 were in Category 4.
- (4) Patients 13 to 64 years old spent 3,465 days in hospital of which 1,499 were in Category 2.
- (5) Patients 65 years of age or older spent 6,300 days in hospital of which 3,402 were in Category 2.
- (6) (a) 99 of the 251 short-stay patients who were discharged during the survey period were discharged on a day during which they were in a more dependent category than Category 1.

The other 152 short-stay patients were in Category 1 on the day of discharge and had spent a number of days continuously in that category immediately before discharge which ranged from 1 to 37 with a mean value of 6.1.

The number of such patient days was 924.

- (b) 4 of the 7 long-stay patients were more dependent than Category 1 on discharge and the other 3 spent 1, 6 and 19 days continuously in Category 1 immediately before discharge.
- (c) 118 of the 251 short-stay patients were discharged on a day during which they received at least one item of special nursing care and the other 133 spent a number of consecutive days immediately before discharge during which they did not receive any such item of care which ranged from 1 to 44 with a mean value of 7.5

The number of such patient days was 1,003.

- (d) 3 of the 7 long-stay patients similarly were discharged on a day during which they receive at least one item of special nursing care, and the other 4 spent 11, 14, 18 and 23 consecutive days immediately before discharge during which they did not receive any such item of care.

The number of such patient days was 66.

- (7) Other observations are made in Section 7.7.

7.67 COMMENTS

- (1) On admission, 39.5% of the patients were in Category 2.
- (2) On discharge, 59.7% of the patients were in Category 1.
- (3) Altogether 16.0% of the patient days in the sample were in Category 1, 46.5% in Category 2, 36.6% in Category 3 and .9% in Category 4.
- (4) In individual wards the distribution of dependency category is extremely variable.
- (5) Other comments especially on pre-discharge dependency are made in Section 7.7.

7.7 DISCUSSION

This section deals with subjects which are more appropriately grouped together following the previous sections.

7.71 PERCENTAGE OCCUPANCY

Since the number of the beds occupied by the type of patient in the sample is variable a percentage occupancy by hospital is not meaningful

Some wards, however, were completely covered by the sample during the survey period and the relevant percentage occupancies are as follows:-

- | | | |
|-------|-------------------|--------|
| (a) | Princess Margaret | |
| (i) | Ward B1 | 127.7% |
| (ii) | Ward B2 | 95.9% |
| (iii) | Ward B4 | 98.0% |
| (b) | Burwood | |
| (i) | Ward 2 | 71.7% |
| (ii) | Ward 6 | 79.9% |
| (iii) | Ward 9 | 75.2% |
| (iv) | Ward 10 | 117.0% |

In considering bed turnover, types of beds in use and the prediction of demand, a percentage occupancy of 85 is assumed.

7.72 EQUIVALENT BEDS

At Christchurch the sample of 3,412 patient days represents a load of 10,236 patient days in 88 days. Corresponding loads for Princess Margaret and Burwood are 10,020 patient days in 86 days and 9,039 patient days in 91 days.

These hospital loads are shown for short-stay and long-stay patients by age-group in Table 21, and the corresponding numbers of equivalent beds are given for 100%, 90% and 85% occupancies in Table 22.

In all the equivalent beds in use during the survey period were 332.1 at 100% occupancy, 368.9 at 90% and 390.6 at 85%.

If an 85% occupancy is assumed Christchurch provided 136.8 beds, Princess Margaret 137.0 beds and Burwood 116.8 beds.

7.73 BED TURNOVER

If an 85% occupancy is assumed the 136.8 beds at Christchurch dealt with 163 patients in the sample who were discharged or who died during the survey period. The equivalent annual rate for discharges and deaths was 2,028 and the bed turnover was 15.7 patients per bed per year.

Corresponding values for Princess Margaret are an annual rate of 1,655 discharges and deaths and a bed turnover of 12.1 patients per bed per year.

The values for Burwood are 529 discharges and deaths per year and 4.8 patients per bed per year.

7.74 PRE-DISCHARGE DEPENDENCY

The following comments on pre-discharge dependency are made further to those in Section 7.67.

- (a) The survey sample of patients spent 9,765 patient days in hospital during the survey period.

3,591 of the 9,765 patient days were spent by patients who were discharged during the survey period.

950 of the 3,591 patient days were spent in periods of consecutive days before discharge in Category 1.

The 950 patient days are 9.7% of the 9,765 patient days and 26.5% of the 3,591 patient days.

- (b) 1,069 of the 3,591 patient days were spent in periods of consecutive days before discharge during which patients did not receive any item of special nursing care.

The 1,069 patient days are 10.9% of the 9,765 and 29.8% of the 3,591 patient days.

- (c) A patient may properly be in hospital when he is in Dependency Category 1, or when he is not receiving any of the items of special nursing care. It is emphasised that the decision to discharge a patient or to transfer him to other accommodation must remain with the medical practitioner responsible for the care. Notwithstanding this, the survey data suggest that two questions should be answered:-

- (i) Can any of the patients be discharged sooner?
- (ii) How many days of the patients stay can be spent as profitably in convalescent as in acute hospital accommodation?

Answers to the questions are attempted in Section 7.76 after considering the type of beds involved in Section 7.75.

7.75 TYPE OF BEDS

The survey data have been used to assess the equivalent numbers of beds in use during the survey period in three types, namely acute, convalescent and self-care where:

- (1) An "acute bed" is a bed occupied by a patient receiving at least one item of special nursing care.
- (2) A "convalescent bed" is a bed occupied by a patient who is not receiving any item of special nursing care.
- (3) A "self-care bed" is a bed occupied by a convalescent patient who has spent one day in Dependency Category 1 in the course of a progressive recovery before discharge.

The following comments are made in line with the definitions:

- (a) The equivalent numbers of beds at 100% occupancy are given for the three types below. The numbers of acute beds relative to convalescent are over-stated because the patient days spent during the survey period by patients in hospital at the end of the survey have been considered as days spent in an acute bed and because the criteria for distinguishing convalescent from acute care are more difficult to establish for medical patients than for surgical patients. It is hoped that further studies will provide better criteria.

TYPE OF PATIENT	AGE-GROUP (YEARS)	TYPE OF BED			
		ACUTE	CONVALESCENT	SELF-CARE	ALL
Short-Stay	13 - 64	88.1	8.5	5.4	102.0
	65 and over	98.2	10.0	2.2	110.4
	All	186.3	18.5	7.6	212.4
Long-stay	13 - 64	15.6	1.0	-	16.6
	65 and over	102.2	.9	-	103.1
	All	117.8	1.9	-	119.7
ALL	13 - 64	103.7	9.5	5.4	118.6
	65 and over	200.4	10.9	2.2	213.5
	ALL	304.1	20.4	7.6	332.1

(b) Corresponding numbers of beds at an 85% occupancy rate are:

TYPE OF PATIENT	AGE-GROUP (YEARS)	TYPE OF BED			
		ACUTE	CONVALESCENT	SELF-CARE	ALL
Short-Stay	13 - 64	103.6	10.0	6.4	120.0
	65 and over	115.5	11.7	2.6	129.8
	All	219.1	21.7	9.0	249.8
Long-Stay	13 - 64	18.3	1.1	-	19.4
	65 and over	120.3	1.1	-	121.4
	All	138.6	2.2	-	140.8
ALL	13 - 64	121.9	11.1	6.4	139.4
	65 and over	235.8	12.8	2.6	251.2
	ALL	357.7	23.9	9.0	390.6

(c) For an 85% occupancy the numbers of beds for short-stay and long-stay patients by type of bed, with corresponding rates per 100,000 population are to the nearest integer:

TYPE OF PATIENT	TYPE OF BED	NUMBER OF BEDS	BEDS PER 100,000 POPULATION
Short-Stay	Acute	219	80
	Convalescent	22	8
	Self-Care	9	3
	All	250	91
Long-Stay	Acute	139	51
	Convalescent	2	1
	Self-Care	-	-
	All	141	52
ALL	Acute	358	131
	Convalescent	24	9
	Self-Care	9	3
	ALL	391	143

The beds used by patients admitted under a consultant physician were, therefore, equivalent to 143 beds per 100,000 population.

Of the 143 beds, 91 were used by short-stay patients and 52 by long-stay; 131 were used as acute beds; 9 as convalescent beds and 3 as self-care beds.

These values are used in Section 7.76 in predicting the bed demand up to 1981.

7.76 PREDICTION OF DEMAND

This section of the report records:

- (1) A base line for further studies by predicting the number of beds needed on a population basis for short-stay and long-stay patients admitted under a consultant physician.
- (2) The effect on the number of acute beds if convalescent beds are provided as indicated reasonable by the survey data, and if an earlier discharge of some patients as proposed is practicable.
- (3) Proposed numbers of acute and convalescent beds to be provided in public hospitals in Christchurch.

7.761 GENERAL

A prediction of demand must take into account factors which limit the value of simple extrapolations of numbers based on present use and population forecasts. Among these factors are:

- (1) Changes in the epidemiological pattern of disease; and
- (2) Improvements in diagnostic and other services which could reduce the need for admission to hospital or the length of stay.

7.762 ASSESSMENT ON POPULATION BASIS

Here the number of beds per 100,000 population are assessed. The level of demand indicated by the survey data has been used with population predictions supplied by the Ministry of Works. Assumptions made include the following:

- (1) Private hospitals will continue to take the same type of patient and the same proportion of the load as they did during the survey.
- (2) Consultant, nursing and other services will expand to match the availability of beds.
- (3) There will be no significant change in the percentage of persons over 12 years of age in the predicted populations.
- (4) The incidence and treatment of patients admitted under the care of a consultant physician will not significantly change.

Subject particularly to these assumptions the following comments are made:

- (a) During the survey the equivalent number of beds in use was 332.1, 368.9 or 390.6 at a percentage occupancy of 100, 90 or 85.

Corresponding values for short-stay patients were 212.4, 236.0 and 249.8 and for long-stay patients, 119.7, 132.9 and 140.8.

A prediction of demand based on these values is given below for the stated years and populations.

YEAR	POPULATION (Thousands)	TYPE OF PATIENT	PERCENTAGE OCCUPANCY		
			100	90	85
1962	274	Short-Stay	212.4	236.0	249.8
		Long-Stay	119.7	132.9	140.8
		All	332.1	368.9	390.6
1966	300.7	Short-Stay	233.1	259.0	274.1
		Long-Stay	131.4	145.9	154.5
		All	364.5	404.9	428.6
1971	337.2	Short-Stay	261.4	290.4	307.4
		Long-Stay	147.3	163.6	173.3
		All	408.7	454.0	480.7
1981	419.7	Short-Stay	325.3	361.5	382.6
		Long-Stay	183.4	203.6	215.7
		All	508.7	565.1	598.3

- (b) A prediction of demand for acute, convalescent and self-care beds based on the data of Section 7.75 (c) is given below.

YEAR	POPULATION (Thousands)	TYPE OF PATIENT	TYPE OF BED			
			ACUTE	CONVALESCENT	SELF-CARE	ALL
1962	274	Short-Stay	219	22	9	250
		Long-Stay	139	2	-	141
		All	358	24	9	391
1966	300.7	Short-Stay	240	24	10	274
		Long-Stay	153	2	-	155
		All	393	26	10	429
1971	337.2	Short-Stay	270	27	11	308
		Long-Stay	170	3	-	173
		All	440	30	11	481
1981	419.7	Short-Stay	335	33	14	382
		Long-Stay	213	3	-	216
		All	548	36	14	598

7.763 RECOMMENDED PROVISION

An accurate prediction of beds depends, inter alia, upon the provision and use of extra-hospital services.

On the face of it, the staff, services and facilities of an acute public hospital are not required to provide the types of care called "self-care" and "convalescent care" in these discussions.

The right of a consultant physician to decide the appropriate place of care of his patient is supported but a useful objective aid in deciding when to transfer or discharge a patient would be provided by a progressive recording of the patient's daily dependency upon the ward nursing staff and services.

On an epidemiological basis, if suitable extra-hospital services were available and used, a reasonable bed provision would be:

- (1) Acute beds - 131 per 100,000 population.
- (2) Convalescent beds - up to 8 per 100,000.

The numbers of beds of the two types at these rates for the given years are:

PREDICTED BEDS

<u>YEAR</u>	<u>ACUTE</u>	<u>CONVALESCENT</u>	<u>ALL</u>
1962	359	22	381
1966	394	24	418
1971	442	27	469
1981	550	34	584

It is recommended that the Board plan for the number of beds required in 1981 and that 550 acute beds and 34 convalescent beds be accepted as the requirement.

(No account has been taken in this survey of the part played by the beds of the Medical Unit so that the above recommendation is exclusive of the beds provided by the Medical Unit).

The acute beds are expected to contribute 163 beds per 100,000 population in 1971 and 131 beds per 100,000 in 1981. The convalescent beds can be considered as part of the total required by patients in a number of specialities.

7.8 CONCLUSION AND RECOMMENDATIONS

This part of the report attempts to assess the dependency of patients admitted to hospital under a consultant physician upon the ward nursing staff and upon some ward services. As in the reports dealing with other specialities there is seen the difficulty in deciding when a patient should leave hospital. It is stressed that this decision is one properly to be made by the medical practitioner responsible for the patient's care. This study which is an epidemiological one, however, contains data which can assist in this and other decisions. In line with the comments and discussion in the report it is recommended that the Board -

- (1) admit patients under consultant physicians to fewer wards;
- (2) discharge sooner patients not receiving any item of special nursing care;
- (3) use convalescent accommodation for patients no longer in need of acute accommodation;
- (4) introduce a system of recording progressively a patient's state of dependency to assist consultants in discharging or transferring patients;
- (5) augment extra-hospital services where necessary to enable hospital beds to be used to the best advantage;
- (6) provide some 550 acute beds and 34 convalescent beds in public hospitals in Christchurch to serve patients admitted under consultant physicians until 1981;
- (7) use the survey data to assist in planning and designing the wards;
- (8) evaluate conjointly with the Research and Planning Unit the results of accepting any of the above recommendations after a year's operation.

TABLE 1 PATIENTS IN HOSPITAL AT THE START OF THE SURVEY, ADMITTED DURING THE SURVEY AND IN HOSPITAL AT THE END OF THE SURVEY, BY HOSPITAL AND TYPE OF ADMISSION

HOSPITAL	NUMBER OF PATIENTS											
	AT START OF SURVEY			ADMITTED DURING SURVEY			AT END OF SURVEY			ALL		
	E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL
Christchurch	32	5	37	166	6	172	44	2	46	198	11	209
Princess Margaret	30	5	35	133	5	138	40	3	43	163	10	173
Burwood	8	27	35	31	13	44	11	24	35	39	40	79
ALL	70	37	107	330	24	354	95	29	124	400	61	461

TABLE 2 PATIENTS IN HOSPITAL AT THE START OF THE SURVEY, ADMITTED DURING THE SURVEY AND IN HOSPITAL AT THE END OF THE SURVEY BY HOSPITAL AND WARD

HOSPITAL	WARD*	NUMBER OF PATIENTS					
		AT START	ADMITTED	DISCHARGED	DIED	STILL IN	ALL
Christchurch	2	10	56	37	12	17	66
	3	1	-	-	-	1	1
	4	6	17	16	4	3	23
	6	5	30	18	10	7	35
	8	1	-	1	-	-	1
	9B	-	1	1	-	-	1
	10	1	2	3	-	-	3
	12B	3	23	17	4	5	26
	13A	7	32	22	7	10	39
	13B	3	11	9	2	3	14
	ALL	37	172	124	39	46	209
Princess Margaret	B1	9	43	32	5	15	52
	B2	11	34	26	9	10	45
	B3	6	22	19	5	4	28
	A4	-	2	1	-	1	2
	B4	9	37	25	8	13	46
	ALL	45	138	103	27	43	173
Burwood	2	5	1	-	-	6	6
	5	1	8	8	-	1	9
	6	10	27	22	5	10	37
	7	-	1	1	-	-	1
	9	9	-	-	2	7	9
	10	10	7	-	6	11	17
	ALL	35	44	31	13	35	79
ALL		107	354	258	79	124	461

* Ward is ward of discharge.

TABLE 3 PATIENTS BY SEX, AGE-GROUP AND HOSPITAL

AGE-GROUP (YEARS)	HOSPITAL								
	CHRISTCHURCH			PRINCESS MARGARET			BURWOOD		
	MALE	FEMALE	ALL	MALE	FEMALE	ALL	MALE	FEMALE	ALL
13 - 64	52	51	103	49	41	90	9	19	28
65 and over	50	56	106	33	50	83	28	23	51
ALL	102	107	209	82	91	173	37	42	79

TABLE 4 PATIENTS BY TYPE OF ADMISSION, HAVING SURGERY, AND HOSPITAL

HOSPITAL	HAVING SURGERY	TYPE OF ADMISSION		
		EMERGENCY	WAITING-LIST	ALL
Christchurch	YES	7	4	11
	NO	191	7	198
	ALL	198	11	209
Princess Margaret	YES	14	1	15
	NO	149	9	158
	ALL	163	10	173
Burwood	YES	2	3	5
	NO	37	37	74
	ALL	39	40	79
ALL	YES	23	8	31
	NO	377	53	430
	ALL	400	61	461

TABLE 5 PATIENTS BY REASON FOR ADMISSION AND HOSPITAL

HOSPITAL	REASON FOR ADMISSION				
	THERAPY	INVESTIGATION	INFECTIOUS	OTHER	ALL
Christchurch	165	36	5	3	209
Princess Margaret	152	20	-	1	173
Burwood	40	10	1	28	79
ALL	357	66	6	32	461

TABLE 6 PATIENTS BY DISEASE-GROUP, HOSPITAL AND TYPE OF ADMISSION

DISEASE-GROUP		HOSPITAL												
CODE NOS.	DESCRIPTION	CHRISTCHURCH		PRINCESS MARGARET		BURWOOD		ALL						
		E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL				
										%				
330 - 334	Vascular lesions of central nervous system	21	-	21	20	-	20	9	7	16	50	7	57	12.4
420 - 422	Arteriosclerotic and degenerative heart disease	27	-	27	17	-	17	-	1	1	44	1	45	9.8
490 - 493	Pneumonia	20	-	20	16	-	16	4	2	6	40	2	42	9.1
780 - 795	Symptoms, senility and ill defined conditions	7	1	8	16	1	17	2	2	4	25	4	29	6.3
430 - 434	Other heart disease	13	-	13	8	-	8	4	2	6	25	2	27	5.8
500 - 502	Chronic bronchitis	11	-	11	10	-	10	2	2	4	23	2	25	5.4
140 - 205	Malignant neoplasms	8	-	8	12	1	13	1	2	3	21	3	24	5.2
350 - 357	Other diseases of central nervous system	7	-	7	3	2	5	-	8	8	10	10	20	4.3
260	Diabetes	4	1	5	8	1	9	2	2	4	14	4	18	3.9
440 - 447	Heart and other hypertensive disease	9	1	10	5	-	5	-	-	-	14	1	15	3.2
480 - 483	Influenza	4	-	4	4	-	4	6	-	6	14	-	14	3.0
300 - 318	Mental, psychoneurotic, personality disorders	3	-	3	7	2	9	-	-	-	10	2	12	2.6
700 - 716	Other diseases of skin and subcutaneous tissue	9	1	10	-	-	-	-	-	-	9	1	10	2.2
280 - 293	Metabolic disease, anaemia	2	-	2	4	-	4	3	-	3	9	-	9	2.0
320 - 326	Disorders, character, behaviour, intelligence	2	-	2	7	-	7	-	-	-	9	-	9	2.0
460, 462-468	Diseases of veins and circulatory system	6	-	6	-	-	-	1	2	3	7	2	9	2.0
REMAINDER		45	7	52	26	3	29	5	10	15	76	20	96	20.8
ALL		198	11	209	163	10	173	39	40	79	400	61	461	100

TABLE 7 PATIENT DAYS BY HOSPITAL AND WARD, NUMBER AND PERCENTAGE

HOSPITAL	WARD*	PATIENT DAYS	
		NUMBER	PERCENTAGE
Christchurch	2	1,051	10.7
	3	87	.9
	4	475	4.9
	6	327	3.3
	8	44	.4
	9B	1	.0
	10	96	1.0
	12B	329	3.4
	13A	622	6.4
	13B	380	3.9
	All	3,412	34.9
Princess Margaret	B1	1,098	11.2
	B2	825	8.5
	B3	558	5.7
	A4	16	.2
	B4	843	8.6
	All	3,340	34.2
Burwood	2	457	4.7
	5	48	.5
	6	752	7.7
	7	7	.1
	9	684	7.0
	10	1,065	10.9
	All	3,013	30.9
ALL	ALL	9,765	100

* Ward is ward of discharge.

TABLE 8 PATIENT DAYS BY SEX, AGE-GROUP AND HOSPITAL

AGE-GROUP (YEARS)	HOSPITAL								
	CHRISTCHURCH			PRINCESS MARGARET			BURWOOD		
	MALE	FEMALE	ALL	MALE	FEMALE	ALL	MALE	FEMALE	ALL
13 - 64	816	850	1,666	642	630	1,272	343	184	527
65 and over	801	945	1,746	745	1,323	2,068	1,118	1,368	2,486
ALL	1,617	1,795	3,412	1,387	1,953	3,340	1,461	1,552	3,013

TABLE 9 PATIENT DAYS BY TYPE OF ADMISSION, HAVING SURGERY AND HOSPITAL

HOSPITAL	HAVING SURGERY	TYPE OF ADMISSION		
		EMERGENCY	WAITING-LIST	ALL
Christchurch	YES	119	103	222
	NO	3,007	183	3,190
	All	3,126	286	3,412
Princess Margaret	YES	401	29	430
	NO	2,663	247	2,910
	All	3,064	276	3,340
Burwood	YES	12	79	91
	NO	737	2,185	2,922
	All	749	2,264	3,013
ALL	YES	532	211	743
	NO	6,407	2,615	9,020
	ALL	6,939	2,826	9,765

TABLE 10 PATIENT DAYS BY REASON FOR ADMISSION AND HOSPITAL

HOSPITAL	REASON FOR ADMISSION				
	THERAPY	INVESTIGATION	INFECTIOUS	OTHER	ALL
Christchurch	2,676	655	51	30	3,412
Princess Margaret	3,049	269	-	22	3,340
Burwood	1,178	215	10	1,610	3,013
ALL	6,903	1,139	61	1,662	9,765

TABLE 11 (a) PATIENT DAYS BY DISEASE-GROUP, HOSPITAL AND TYPE OF ADMISSION

DISEASE-GROUP			HOSPITAL											
CODE NOS.	DESCRIPTION	CHRISTCHURCH		PRINCESS MARGARET		BURWOOD		ALL						
		E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL	%			
330 - 334	Vascular lesions of central nervous system	362	-	362	710	-	710	294	395	689	1366	395	1761	18.0
350 - 357	Other diseases of central nervous system	198	-	198	79	36	115	-	498	498	267	534	811	8.3
420 - 422	Arteriosclerotic and degenerative heart disease	455	-	455	227	-	227	-	91	91	682	91	773	7.9
780 - 795	Symptoms, senility and ill-defined conditions	99	3	102	365	8	373	43	94	137	507	105	612	6.3
490 - 493	Pneumonia	221	-	221	247	-	247	59	63	122	527	63	590	6.0
500 - 502	Chronic bronchitis	238	-	238	190	-	190	39	67	106	467	67	534	5.5
260	Diabetes	32	34	66	166	86	252	106	78	184	304	198	502	5.1
140 - 205	Malignant neoplasms	84	-	84	189	29	218	15	81	96	288	110	398	4.1
720 - 725	Arthritis	160	24	184	-	-	-	23	182	205	183	206	389	4.0
430 - 434	Other heart disease	139	-	139	79	-	79	77	71	148	295	71	366	3.7
800 - 999	Accidents, poisoning and violence	4	-	4	7	-	7	3	277	280	14	277	291	3.0
440 - 447	Heart and other hypertensive disease	131	5	136	103	-	103	-	-	-	234	5	239	2.4
460, 462-468	Diseases of veins and circulatory system	121	-	121	-	-	-	25	84	109	146	84	230	2.4
340 - 345	Inflammatory diseases of central nervous system	19	-	19	20	-	20	-	169	169	39	169	208	2.1
300 - 318	Mental, psychoneurotic, personality disorders	30	-	30	72	91	163	-	-	-	102	91	193	2.0
570, 572-578	Other diseases of intestines and peritoneum	12	147	159	5	-	5	-	23	23	17	170	187	1.9
450 - 456	Diseases of arteries	126	-	126	59	-	59	-	-	-	185	-	185	1.9
700 - 716	Other diseases of skin and subcutaneous tissue	156	16	172	-	-	-	-	-	-	156	16	172	1.8
REMAINDER		539	57	596	546	26	572	65	91	156	1150	174	1324	13.6
ALL		3126	286	3412	3064	276	3340	749	2264	3013	6939	2826	9765	100

TABLE 11 (b) PATIENT DAYS BY DISEASE-GROUP, HOSPITAL AND TYPE OF ADMISSION FOR PATIENTS 13 TO 64 YEARS OF AGE

DISEASE-GROUP		HOSPITAL												
CODE NOS.	DESCRIPTION	CHRISTCHURCH		PRINCESS MARGARET		BURWOOD		ALL						
		E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL				
420 - 422	Arteriosclerotic and degenerative heart disease	304	-	304	97	-	97	-	-	-	401	-	401	11.6
780 - 795	Symptoms, senility and ill-defined conditions	55	3	58	156	8	164	24	-	24	235	11	246	7.1
330 - 334	Vascular lesions of central nervous system	108	-	108	96	-	96	21	-	21	225	-	225	6.5
500 - 502	Chronic bronchitis	122	-	122	33	-	33	20	34	54	175	34	209	6.0
440 - 447	Heart and other hypertensive disease	89	5	94	103	-	103	-	-	-	192	5	197	5.7
490 - 493	Pneumonia	46	-	46	71	-	71	59	-	59	176	-	176	5.1
300 - 318	Mental, psychoneurotic, personality disorders	13	-	13	72	91	163	-	-	-	85	91	176	5.1
340 - 345	Inflammatory diseases of central nervous system	4	-	4	-	-	-	-	169	169	4	169	173	5.0
350 - 357	Other diseases of central nervous system	43	-	43	11	-	11	-	100	100	54	100	154	4.4
460, 462-468	Diseases of veins and circulatory system	95	-	95	-	-	-	25	14	39	120	14	134	3.9
260	Diabetes	4	34	38	74	-	74	-	-	-	78	34	112	3.2
430 - 434	Other heart disease	63	-	63	31	-	31	17	-	17	111	-	111	3.2
450 - 456	Diseases of arteries	108	-	108	-	-	-	-	-	-	108	-	108	3.1
140 - 205	Malignant neoplasms	29	-	29	65	-	65	-	-	-	94	-	94	2.7
REMAINDER		428	113	541	338	26	364	44	-	44	810	139	949	27.4
ALL		1511	155	1666	1147	125	1272	210	317	527	2868	597	3465	100

TABLE 11 (c) PATIENT DAYS BY DISEASE-GROUP, HOSPITAL AND TYPE OF ADMISSION FOR PATIENTS 65 YEARS OF AGE AND OVER

DISEASE-GROUP		HOSPITAL												
CODE NOS.	DESCRIPTION	CHRISTCHURCH		PRINCESS MARGARET		BURWOOD		ALL						
		E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL				
330 - 334	Vascular lesions of central nervous system	254	-	254	614	-	614	273	395	668	1141	395	1536	24.4
350 - 357	Other diseases of central nervous system	155	-	155	68	36	104	-	398	398	223	434	657	10.4
490 - 493	Pneumonia	175	-	175	176	-	176	-	63	63	351	63	414	6.6
260	Diabetes	28	-	28	92	86	178	106	78	184	226	164	390	6.2
420 - 422	Arteriosclerotic and degenerative heart disease	151	-	151	130	-	130	-	91	91	281	91	372	5.9
780 - 795	Symptoms, senility and ill-defined conditions	44	-	44	209	-	209	19	94	113	272	94	366	5.8
500 - 502	Chronic bronchitis	116	-	116	157	-	157	19	33	52	292	33	325	5.2
720 - 725	Arthritis	115	-	115	-	-	-	23	182	205	138	182	320	5.1
140 - 205	Malignant neoplasms	55	-	55	124	29	153	15	81	96	194	110	304	4.8
800 - 999	Accidents, poisoning and violence	-	-	-	-	-	-	-	277	277	-	277	277	4.4
430 - 434	Other heart disease	76	-	76	48	-	48	60	71	131	184	71	255	4.1
570, 572-578	Other diseases of intestines and peritoneum	12	87	99	-	-	-	-	23	23	12	110	122	1.9
460, 462-468	Diseases of veins and circulatory system	26	-	26	-	-	-	-	70	70	26	70	96	1.5
700 - 716	Other diseases of skin and subcutaneous tissue	79	16	95	-	-	-	-	-	-	79	16	95	1.5
REMAINDER		329	28	357	299	-	299	24	91	115	652	119	771	12.2
ALL		1615	131	1746	1917	151	2068	539	1947	2486	4071	2229	6300	100

TABLE 12 FREQUENCY DISTRIBUTION OF LENGTHS OF STAY FOR DISCHARGES AND FOR DEATHS BY HOSPITAL AND AGE-GROUP

DISCHARGES

HOSPITAL	AGE-GROUP (YEARS)	NUMBER OF DAYS IN LENGTH OF STAY																															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	>30	ALL
Christchurch	13 - 64	3	-	2	1	5	1	3	3	4	1	2	2	5	1	2	-	3	3	3	4	1	-	-	1	2	-	1	2	1	1	a 10	67
	65 and over	-	2	-	2	-	1	3	2	1	3	-	4	1	2	3	2	3	3	3	2	-	1	4	-	1	1	1	1	-	-	b 11	57
	All	3	2	2	3	5	2	6	5	5	4	2	6	6	3	5	2	6	6	6	6	1	1	4	1	3	1	2	3	1	1	21	124
Princess Margaret	13 - 64	-	1	1	6	6	-	4	4	3	5	5	3	1	3	2	-	1	2	1	3	2	1	-	-	1	-	-	1	-	1	c 9	66
	65 and over	-	1	1	-	1	2	2	-	-	3	4	3	-	3	-	-	1	-	1	3	1	1	3	2	-	-	-	-	-	d 5	37	
	All	-	2	2	6	7	2	6	4	3	8	9	6	1	6	2	-	2	2	2	6	3	2	3	2	1	-	-	1	-	1	14	103
Burwood	13 - 64	-	2	3	3	2	1	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	1	1	-	1	-	-	-	-	e 3	20	
	65 and over	-	-	-	1	-	-	2	-	-	-	1	-	-	-	1	-	-	-	-	2	-	-	-	-	-	-	1	-	-	f 3	11	
	All	-	2	3	4	2	1	2	-	1	1	1	-	-	-	-	1	-	-	-	2	-	1	1	-	1	-	-	1	-	6	31	
ALL	13 - 64	3	3	6	10	13	2	7	7	8	7	7	6	6	4	4	-	4	5	4	7	3	2	1	1	4	-	1	3	1	2	22	153
	65 and over	-	3	1	3	1	3	7	2	1	6	5	7	1	5	3	3	4	3	4	7	1	2	7	2	1	1	1	1	-	19	105	
	ALL	3	6	7	13	14	5	14	9	9	13	12	13	7	9	7	3	8	8	8	14	4	4	8	3	5	1	2	4	2	2	41	258

DEATHS

Christchurch	13 - 64	3	1	-	1	2	-	-	-	1	1	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	g 1	11
	65 and over	1	5	1	3	2	2	2	2	-	-	2	-	1	-	1	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	h 4	28
	All	4	6	1	4	4	2	2	2	1	1	2	1	1	-	-	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	5	39
Princess Margaret	13 - 64	1	1	1	-	-	1	-	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	i 1	9
	65 and over	1	1	1	1	-	1	-	-	-	2	-	-	-	-	-	-	1	-	1	-	-	-	-	1	-	1	-	-	-	-	j 5	18
	ALL	2	2	2	1	-	2	1	-	1	-	2	-	1	-	-	-	2	-	1	-	-	-	-	1	1	1	-	-	-	-	6	27
Burwood	13 - 64	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	k 1	2
	65 and over	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	l 9	11
	ALL	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	10	13
ALL	13 - 64	5	2	1	1	2	1	-	-	2	1	-	1	1	-	-	-	1	-	-	-	-	-	-	-	1	-	-	-	-	-	3	22
	65 and over	3	6	2	4	2	3	3	2	-	-	4	-	1	-	-	1	3	-	1	-	-	-	-	1	1	1	-	-	-	-	18	57
	ALL	8	8	3	5	4	4	3	2	2	1	4	1	2	-	-	1	4	-	1	-	-	-	1	2	1	-	-	-	-	1	21	79

a 32, 32, 33, 34, 40, 43, 65, 87, 149, 238

b 31, 31, 32, 33, 45, 45, 59, 61, 66, 79, 132

c 31, 34, 34, 38, 38, 39, 49, 51, 71

d 33, 47, 68, 138, 199

e 35, 36, 157

f 31, 44, 496

g 137

h 33, 33, 70, 216

i 64

j 31, 36, 36, 39, 72

k 38

l 34, 77, 158, 191, 217, 229, 231, 392, 603.

FIGURE 1 FREQUENCY DISTRIBUTIONS OF LENGTHS OF STAY FOR DISCHARGES AND FOR DEATHS

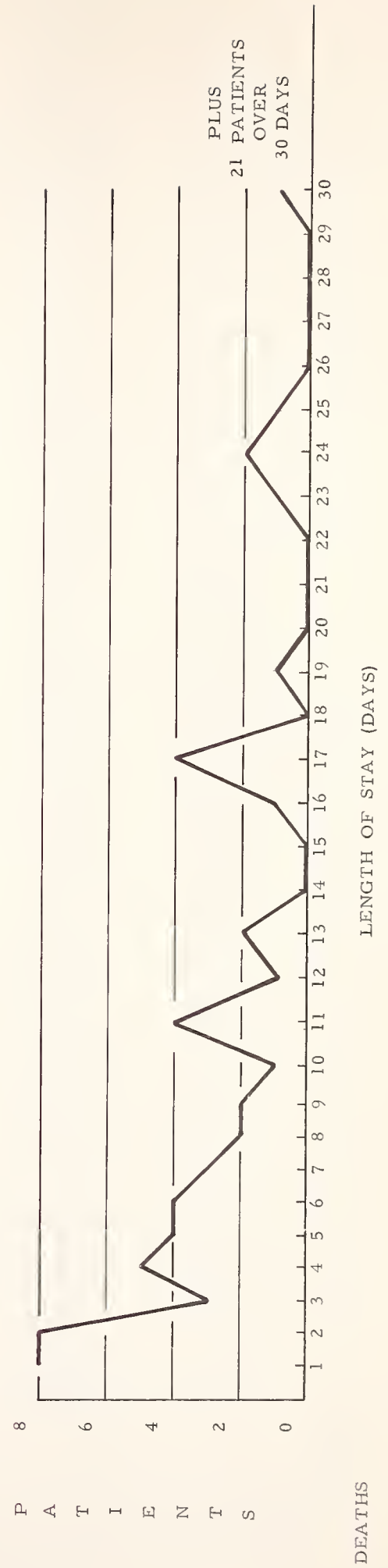
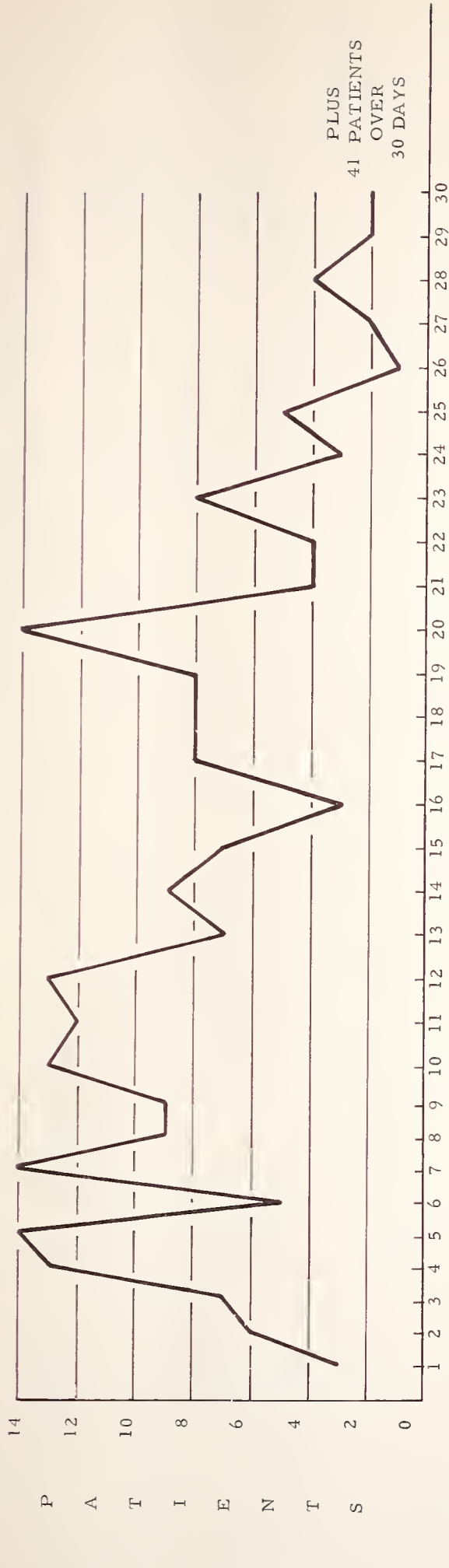


TABLE 13 FREQUENCY DISTRIBUTION OF LENGTHS OF STAY FOR PATIENTS STILL IN HOSPITAL AT END OF SURVEY BY HOSPITAL AND AGE-GROUP

HOSPITAL	AGE-GROUP (YEARS)	NUMBER OF DAYS IN LENGTH OF STAY																															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	>30	ALL
Christchurch	13 - 64	-	2	2	1	1	-	-	2	1	1	1	-	1	-	1	-	-	-	1	-	-	1	-	-	-	-	-	1	-	-	a 9	25
	65 and over	-	-	3	-	1	-	1	-	-	-	-	1	-	-	-	2	2	1	-	-	1	-	-	-	1	-	1	-	-	b 7	21	
	All	-	2	5	1	2	-	1	2	1	1	1	-	2	-	1	-	2	2	2	-	-	2	-	-	-	1	-	2	-	-	16	46
Princess Margaret	13 - 64	1	-	-	-	1	1	-	-	-	-	1	-	-	1	2	-	-	1	1	-	-	-	1	-	-	-	-	1	1	c 3	15	
	65 and over	1	2	-	2	-	-	1	-	-	1	-	1	-	-	-	-	-	-	-	1	-	-	1	-	1	-	1	-	1	d 15	28	
	All	2	2	-	2	1	1	1	-	-	1	-	2	-	-	1	2	-	-	1	1	1	-	-	2	-	1	-	2	2	18	43	
Burwood	13 - 64	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	-	e 3	6	
	65 and over	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-	1	-	-	1	1	-	-	1	1	-	1	-	-	-	f 20	29	
	All	-	-	-	-	-	-	-	-	-	-	1	1	-	1	-	1	-	1	1	1	1	-	1	1	-	1	-	-	2	23	35	
ALL	13 - 64	1	2	2	1	2	1	-	2	1	1	1	1	1	-	2	2	-	1	2	1	1	1	-	1	-	-	1	1	2	15	46	
	65 and over	1	2	3	2	1	-	2	-	-	-	1	-	2	2	-	-	1	2	2	2	1	1	1	1	2	-	2	1	1	2	42	78
	ALL	2	4	5	3	3	1	2	2	1	2	1	3	3	-	2	3	2	3	4	2	2	2	1	3	-	2	1	2	2	4	57	124

a 31, 33, 35, 37, 37, 43, 54, 56, 103 d 32, 35, 40, 40, 40, 60, 68, 72, 101, 113, 145, 177, 247, 358, 443

b 31, 31, 50, 69, 129, 374, 466 e 78, 217, 1020

c 36, 43, 320 f 51, 66, 104, 133, 135, 135, 345, 353, 472, 516, 563, 686, 805,
1100, 1188, 1326, 1327, 1350, 2038, 5354

TABLE 14 PATIENT DEPENDENCY ON ADMISSION BY HOSPITAL AND TYPE OF ADMISSION

DEPENDENCY CATEGORY	HOSPITAL AND TYPE OF ADMISSION											
	CHRISTCHURCH			PRINCESS MARGARET			BURWOOD			ALL		
	E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL
1	24	4	28	25	5	30	14	2	16	63	11	74
2	53	1	54	69	-	69	13	4	17	135	5	140
3	79	1	80	31	-	31	3	7	10	113	8	121
4	10	-	10	8	-	8	1	-	1	19	-	19
ALL	166	6	172	133	5	138	31	13	44	330	24	354
												100

TABLE 15 PATIENT DEPENDENCY ON DISCHARGE BY HOSPITAL AND TYPE OF ADMISSION

DEPENDENCY CATEGORY	HOSPITAL AND TYPE OF ADMISSION											
	CHRISTCHURCH			PRINCESS MARGARET			BURWOOD			ALL		
	E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL	E.	W.L.	ALL
1	59	5	65	57	5	62	23	5	28	139	15	154
2	44	3	47	33	1	34	1	1	2	78	5	83
3	13	-	13	7	-	7	-	1	1	20	1	21
4	-	-	-	-	-	-	-	-	-	-	-	-
ALL	116	8	124	97	6	103	24	7	31	237	21	258
												100

TABLE 16 PATIENT DAYS IN EACH DEPENDENCY CATEGORY BY AGE-GROUP AND HOSPITAL

AGE-GROUP (YEARS)	HOSPITAL AND DEPENDENCY CATEGORY														
	CHRISTCHURCH				PRINCESS MARGARET				BURWOOD				ALL		
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3
13 - 64	439	762	448	17	539	520	193	20	115	217	194	1	1093	1499	835
65 and over	163	920	633	30	99	1076	876	17	207	1046	1233	-	469	3042	2742
ALL	602	1682	1081	47	638	1596	1069	37	322	1263	1427	1	1562	4541	3577
															85
															9765

TABLE 17 PATIENT DAYS IN EACH DEPENDENCY CATEGORY BY HOSPITAL AND WARD

HOSPITAL	WARD*	DEPENDENCY CATEGORY				
		1	2	3	4	ALL
Christchurch	2	179	515	338	19	1,051
	3	-	-	87	-	87
	4	93	128	251	3	475
	6	55	203	60	9	327
	8	6	29	6	3	44
	9B	-	-	1	-	1
	10	38	54	4	-	96
	12B	90	124	109	6	329
	13A	81	363	174	4	622
	13B	60	266	51	3	380
	ALL	602	1,682	1,081	47	3,412
Princess Margaret	B1	246	351	495	6	1,098
	B2	162	430	207	26	825
	B3	42	267	249	-	558
	A4	9	1	6	-	16
	B4	179	547	112	5	843
	ALL	638	1,596	1,069	37	3,340
Burwood	2	-	93	364	-	457
	5	23	25	-	-	48
	6	299	366	86	1	752
	7	-	-	7	-	7
	9	-	680	4	-	684
	10	-	99	966	-	1,065
	ALL	322	1 263	1,427	1	3,013
ALL	ALL	1,562	4,541	3,577	85	9,765

*Ward is ward of discharge.

TABLE 18 EQUIVALENT NUMBER OF PATIENTS IN HOSPITAL DURING THE SURVEY PERIOD BY HOSPITAL, DEPENDENCY CATEGORY AND DAY OF WEEK

HOSPITAL	DEPENDENCY CATEGORY		DAY OF WEEK							
			MON	TUES	WED	THUR	FRI	SAT	SUN	ALL
Christchurch	1	Mean Range	19.5 6-33	20.0 9-33	21.2 12-36	22.6 12-36	21.7 12-39	20.3 12-36	18.3 9-30	20.5 6-39
	2	Mean Range	57.5 42-75	57.5 42-69	58.4 45-69	57.9 42-75	57.2 18-63	57.0 45-72	57.5 48-75	57.6 18-75
	3	Mean Range	37.5 18-60	38.3 18-63	37.8 21-72	36.9 21-66	37.2 18-63	36.3 18-60	35.3 15-57	37.0 15-72
	4	Mean Range	1.5 0-3	2.5 0-6	1.6 0-6	1.4 0-3	1.6 0-6	1.0 0-3	1.8 0-6	1.6 0-6
	All	Mean Range	116.0 87-135	118.3 93-135	119.1 87-144	118.8 87-144	117.7 90-141	114.5 93-132	112.8 90-126	116.7 87-144
Princess Margaret	1	Mean Range	23.5 12-36	24.5 15-36	22.3 12-36	21.5 12-36	21.9 12-39	20.0 9-33	21.3 12-33	22.1 9-39
	2	Mean Range	55.8 45-69	54.3 45-66	55.3 45-63	54.7 42-63	56.8 42-69	57.5 48-69	57.0 42-69	55.9 42-69
	3	Mean Range	36.3 27-48	37.8 30-51	37.0 30-51	37.4 24-48	38.1 27-48	36.8 27-45	36.5 27-48	37.1 24-51
	4	Mean Range	1.0 0-6	1.0 0-3	1.0 0-3	1.4 0-6	1.4 0-6	1.8 0-6	1.5 0-9	1.3 0-9
	All	Mean Range	116.5 96-144	117.5 99-138	115.5 99-141	114.9 96-138	118.2 96-144	116.0 93-144	116.3 90-138	116.4 90-144
Burwood	1	Mean Range	9.9 6-18	10.8 6-21	11.3 6-21	10.6 6-18	11.3 6-24	10.5 6-24	9.8 6-24	10.6 6-24
	2	Mean Range	41.8 36-51	41.5 33-54	41.3 33-51	42.0 33-54	40.8 33-51	40.5 36-48	41.3 36-51	41.3 33-54
	3	Mean Range	48.5 42-57	48.7 45-54	48.2 45-54	48.2 45-51	48.5 45-54	48.0 45-57	48.0 42-57	48.3 42-57
	4	Mean Range	0 0-0	0 0-0	0 0-0	0 0-0	.2 0-3	0 0-0	0 0-0	0 0-3
	All	Mean Range	100.2 87-114	101.1 87-111	100.8 90-114	100.8 90-114	100.8 90-114	99.0 87-114	99.0 87-114	100.2 87-114
ALL	1	Mean Range	53.0 33-78	55.3 39-69	54.8 39-72	54.5 39-72	54.0 39-78	51.0 36-72	48.8 33-72	53.1 33-78
	2	Mean Range	154.5 126-174	152.8 129-165	153.5 138-168	154.0 123-171	155.0 129-168	154.6 129-177	155.7 126-180	154.3 123-180
	3	Mean Range	121.5 102-150	124.3 102-156	124.5 102-162	124.3 96-156	125.8 93-153	122.5 96-150	121.4 102-147	123.5 93-162
	4	Mean Range	2.5 0-9	3.5 0-9	2.8 0-9	2.8 0-9	3.3 0-12	2.7 0-9	3.0 0-12	2.9 0-12
	ALL	Mean Range	331.5 276-357	335.8 288-366	335.5 294-381	335.5 288-384	338.0 285-384	330.8 285-387	328.9 273-366	333.7 273-387

(i) The above values are obtained by taking 3 times the sample values.

(ii) The values for "all" do not necessarily agree with the corresponding totals.

TABLE 19 FREQUENCY DISTRIBUTION OF THE NUMBER OF CONSECUTIVE DAYS IMMEDIATELY BEFORE DISCHARGE SPENT BY PATIENTS IN DEPENDENCY CATEGORY 1

TYPE OF PATIENT	AGE-GROUP (YEARS)	NUMBER OF CONSECUTIVE DAYS BEFORE DISCHARGE IN CATEGORY 1																																	
		0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	>30	ALL	
Short-Stay	13 - 64	37	20	14	19	7	13	2	4	5	3	4	5	3	3	-	1	3	2	1	-	1	-	-	-	-	-	-	1	-	-	-	-	2*	150
	65 and over	62	9	9	5	1	1	2	2	2	-	1	1	-	1	-	2	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	101	
	ALL	99	29	23	24	8	14	4	6	7	3	5	6	3	4	-	3	3	3	2	-	1	1	-	-	-	-	-	1	-	-	-	2	251	
Long-Stay	13 - 64	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	3	
	65 and over	2	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4		
	ALL	4	1	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	7		
ALL	13 - 64	39	20	14	19	7	13	2	4	5	3	4	5	3	3	-	1	3	2	1	1	1	-	-	-	-	-	-	1	-	-	-	2	153	
	65 and over	64	10	9	5	1	1	3	2	2	-	1	1	-	1	-	2	-	1	1	-	-	1	-	-	-	-	-	-	-	-	-	-	105	
	ALL	103	30	23	24	8	14	5	6	7	3	5	6	3	4	-	3	3	3	2	1	1	1	-	-	-	-	-	1	-	-	-	2	258	

* 37, 37 days

TABLE 21 PATIENT DAYS FOR SHORT- AND LONG-STAY PATIENTS BY AGE-GROUP AND HOSPITAL

HOSPITAL	AGE-GROUP (YEARS)	SHORT-STAY		LONG-STAY		ALL	
		PATIENTS	DAYS	PATIENTS	DAYS	PATIENTS	DAYS
Christchurch	13 - 64	71	1463	4	203	103	1666
	65 and over	83	1415	5	331	106	1746
	All	154	2878	9	534	209	3412
Princess Margaret	13 - 64	70	1186	1	86	90	1272
	65 and over	73	1371	9	697	83	2068
	All	143	2557	10	783	173	3340
Burwood	13 - 64	25	326	3	201	28	527
	65 and over	25	437	26	2049	51	2486
	All	50	763	29	2250	79	3013
ALL	13 - 64	166	2975	8	490	221	3465
	65 and over	181	3223	40	3077	240	6300
	All	347	6198	48	3567	461	9765

TABLE 22 EQUIVALENT BEDS BY HOSPITAL, LENGTH OF STAY, AGE-GROUP AND PERCENTAGE OCCUPANCY

HOSPITAL	LENGTH OF STAY	AGE-GROUP (YEARS)	PERCENTAGE OCCUPANCY		
			100	90	85
Christchurch	Short-Stay	13 - 64	49.9	55.4	58.7
		65 and over	48.2	53.6	56.7
		All	98.1	109.0	115.4
	Long-Stay	13 - 64	6.9	7.7	8.1
		65 and over	11.3	12.5	13.3
		All	18.2	20.2	21.4
	ALL	13 - 64	56.8	63.1	66.8
		65 and over	59.5	66.1	70.0
		ALL	116.3	129.2	136.8
Princess Margaret	Short-Stay	13 - 64	41.4	46.0	48.7
		65 and over	47.8	53.1	56.2
		All	89.2	99.1	104.9
	Long-Stay	13 - 64	3.0	3.3	3.5
		65 and over	24.3	27.0	28.6
		All	27.3	30.3	32.1
	ALL	13 - 64	44.4	49.3	52.2
		65 and over	72.1	80.1	84.8
		ALL	116.5	129.4	137.0
Burwood	Short-Stay	13 - 64	10.7	11.9	12.6
		65 and over	14.4	16.0	16.9
		All	25.1	27.9	29.5
	Long-Stay	13 - 64	6.7	7.4	7.8
		65 and over	67.5	75.0	79.5
		All	74.2	82.4	87.3
	ALL	13 - 64	17.4	19.3	20.4
		65 and over	81.9	91.0	96.4
		ALL	99.3	110.3	116.8
ALL	Short-Stay	13 - 64	102.0	113.3	120.0
		65 and over	110.4	122.7	129.8
		All	212.4	236.0	249.8
	Long-Stay	13 - 64	16.6	18.4	19.4
		65 and over	103.1	114.5	121.4
		All	119.7	132.9	140.8
	ALL	13 - 64	118.6	131.7	139.4
		65 and over	213.5	237.2	251.2
		ALL	332.1	368.9	390.6

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No. 5	SMOKING HABITS OF SCHOOL CHILDREN	May 1961	2	6
No. 6	SURVEY OF WORK IN COMPRESSED AIR – AUCKLAND HARBOUR BRIDGE	April 1962	6	6
No. 7	TUBERCULOSIS IN CANTERBURY	July 1962	4	0
No. 8	MAORI PATIENTS IN MENTAL HOSPITALS	October 1962	3	0
No. 9	CENSUS OF MENTAL HOSPITAL PATIENTS, 1961	April 1963	4	0
No. 10	ELDERLY PERSONS ACCOMMODATION NEEDS IN NEW ZEALAND, 1962	April 1963	3	6
No. 11	PATIENT-NURSE DEPENDENCY: EXPLORATORY STUDY	December 1963	4	6
No. 12	PATIENT-NURSE DEPENDENCY: GENERAL SURVEY DATA	January 1965	4	6
No. 13	PATIENT- NURSE DEPENDENCY: GYNAECOLOGY	March 1964	5	6
No. 14	PATIENT-NURSE DEPENDENCY: GERIATRICS	December 1964	4	6
No. 15	PATIENT-NURSE DEPENDENCY IN CHRISTCHURCH: PAEDIATRICS	September 1963	4	6
No. 16	SMOKING HABITS OF NEW ZEALAND DOCTORS	July 1964	4	6
No. 17	INFANT AND FOETAL LOSS IN NEW ZEALAND	October 1964	12	6
No. 18	TRENDS IN NOTIFIABLE DISEASE	December 1964	5	6
No. 19	SURVEY OF FACTORY, FIRST AID 1963–64	December 1964	4	6
No. 20	PATIENT-NURSE DEPENDENCY: GENERAL SURGERY	December 1964	5	6
No. 21	PATIENT-NURSE DEPENDENCY: ORTHOPAEDIC SURGERY	January 1965	4	6
No. 22	PATIENT-NURSE DEPENDENCY: GENERAL MEDICINE	April 1965	5	6